GALIN, L. A.

Galin, L. A. An estimate for the displacement in spatial contact problems of the theory of elasticity. Akad. Nauk SSSR. Prikl. Mat. Meh. 12, 241–250 (1948). (Russian)

The paper is concerned with the problem of contact of a rigid punch with an elastic half-space. In section 1, the base of the punch is bounded by the surface $z=f(x, y)$ and the section of the punch, by the plane $z=0$, is an ellipse D. Thus $f(x, y)$ is the displacement of the punch in the z-direction. The punch is acted on by the force P directed along the z-axis and by moments M_x and M_y with respect to the x- and y-axes. The state of stress is determined by a harmonic function $\varphi(x, y, z)$ such that $\varphi=f(x, y)$ in D, $\partial\varphi/\partial z=0$ outside D, $\varphi(x, y, z)\to 0$ as $x^2+y^2+z^2\to\infty$. The author determines φ in a series of Lamé's functions and calculates the displacement in the z-direction and the rotation of the punch relative to the x- and y-axes in terms of P, M_x and M_y.

In section 2 the base of the punch is assumed to be plane and the cross-section enclosing the area A of contact is bounded by an arbitrary curve L. Let a be the major semi-axis and ε the eccentricity of an ellipse circumscribing L; then for a given displacement δ of the punch, the impressed force P is bounded by

$$2\delta E(1-\sigma^2)^{-1}(A/\pi)^{\frac{1}{2}}<P<4E(1-\sigma^2)^{-1}a/F(\pi/2, \varepsilon),$$

where E is Young's modulus, σ is Poisson's ratio, and $F(\pi/2, \varepsilon)$ is the complete elliptic integral of the first kind.

I. S. Sokolnikoff (Los Angeles, Calif.)

Source: Mathematical Reviews, Vol 10, No. 1

GALIN, L.A.

Galin, L. A. On the pressing of a solid body on a plate. Akad. Nauk SSSR. Prikl. Mat. Meh. 12 (1948), 333–343. (Russian)

A rigid body whose surface is determined by the equation $z=Ax^2+By^2$ is brought in contact with a thin clamped circular elastic plate of radius R. The point of initial contact is the center of the plate $x=0$, $y=0$. If the force P, acting along the z-axis, is applied to the body, what is the shape of the area of contact? It is shown that the area of contact is an ellipse provided that its linear dimensions are small compared with R and with the radii of curvature of the surface. The situation in this case is similar to that occurring in the problem of contact of a rigid ellipsoid with an elastic half-space considered by H. Hertz.

I. S. Sokolnikoff (Los Angeles, Calif.)

Source: Mathematical Reviews, Vol. 10, No. 1

GALIN, L. A.

Galin, L. A. An analogy for the plane elastic-plastic problems. Akad. Nauk SSSR. Prikl. Mat. Meh. 12, 757–760 (1948). (Russian)

The author points out that the values of the Airy stress function in certain problems of plane elastic-plastic strain may be obtained experimentally as the deflections of an elastic plate which is loaded along its contour by appropriate forces and couples, the deflections being limited by certain rigid surfaces which represent the statically determinate stress functions in the plastic regions. This analogy resembles the well-known soap film and sand hill analogies for elastic-plastic torsion. [For the special case of a tension strip with a symmetrically located circular hole it was indicated by the reviewer [Theory of Plasticity, Brown University lecture notes, Providence, R. I., 1942, p. 148]. The analogy is based, however, on a tacit assumption which has still to be investigated critically: the stress function φ for the plastic region is formed by integrating the hyperbolic equations of plane plastic equilibrium starting with the given stresses on the contour. The value of φ which is so obtained at a generic point P is correct only if it can be shown that P cannot become plastic before its domain of dependence (arc of the boundary intercepted by the two characteristics through P) has become plastic.]

W. Prager (Providence, R. I.).

Source: Mathematical Reviews, Vol 10 No. 7

GALI[illegible], L. A. i SMIRNOV, L. [illegible].

19742 - GALI[illegible], L. A. i SMIRNOV. L. P. Pelageya Yakovlevna Polubarinova-Kochina. /Matematik i Fizik/ K 50 letiyu so dnya rozhdeniya. Izvestiya Akad. nauk SSSR, otd-niye tekhn. nauk, 1949, No. 6, S. 802-04 S portr.

SO: LETOPIS' ZHURNAL'NYKH STATEY, Vol. 27, MOSKVA 1949

GALIN, L. A.

USSR/Engineering
Mechanics
Plastics - Deformation

Jan/Feb 49

"Review of L. M. Kachanov's 'Mechanics of Plastic Media,'" L. A. Galin, 1 p

"Priklad Matemat i Mekh" Vol XIII, No 1

Favorable review of subject book on theory of small elasticoplastic deformations.

39/49744

GALIN, L. A.

PA 42/49T33

USSR/Engineering
Elasticity
Beams

Mar/Apr 49

"Review of Book, 'A Plane Problem in the Theory of Elasticity of Wood Pulp,' by Professor A. P. Pavlov, Doctor of Technical Sciences," L. A. Galin, G. S. Shapiro, 1 p

"Priklad Matemat i Mekh" Vol XIII, No 2

Critical review of subject book which contains solutions of a number of problems in the theory of beams, which had previously been solved (correctly) by S. G. Lekhnitskiy.

42/49T33

GALIN, L. A.

FA 51/49T33

USSR/Engineering May/Jun 49
Dams

"Review of V. A. Florin's Book, 'Foundation Design for Hydrotechnical Constructions'," L. A. Galin, 3 pp

"Priklad Matemat i Mekh" Vol XIII, No 3

Favorable review of subject book, which discusses practical problems in mechanics of foundations and gives several approximate methods for solution of these problems. Contains little experimental data on distribution of pressures along the foot of the foundation.

[redacted] 51/49T33

GALIN, L. A.

PA 51/49T57

USSR/Physics
Elasticity Theory

May/Jun 49

"Review of N. A. Kil'chevskiy's Book, 'Theory of Collisions of Solid Bodies,'" L. A. Galin, 2 pp

"Priklad Matemat i Mekh" Vol XIII, No 3

Favorable review of subject book, which is concerned primarily with problems arising in the collision of elastic bodies. Considers problems of stresses and deformations in beams, membranes, and shells under various impact conditions.

51/49T57

GALIN, L. A.

Uprugo-plasticheskoe kruchenie prizmaticheskikh sterzhnei. (Prikladnaia matematika i mekhanika, 1949, v. 13, no. 3, p. 285-296, diagrs.)

Title tr.: The elastic-plastic torsion of prismatic bars.

QA801.P7 1949

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

GALIN, L. A.

O sushchestvovanii resheniia uprugo-plasticheskoi zadachi krucheniia prizmaticheskikh sterzhnei. (Prikladnaia matematika i mekhanika, 1949, v. 13, no. 6, p. 650-654)

Title tr.: On the existence of a solution of the elastic-plastic problem of torsion of prismatic bars.

Reviewed by W. Prager in Mathematical Reviews, 1950, v. 11, no. 6, p. 485.

QA 801.P7 1949

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

Galin, L. A. On unsteady filtration with constant pressure on the boundary. Akad. Nauk SSSR. Prikl. Mat. Meh. 15, 111–116 (1951). (Russian)

This paper is an extension of the problem treated earlier by the author [C. R. (Doklady) Acad. Sci. URSS (N.S.) 47, 246–249 (1945); these Rev. 7, 229]. The extension consists in admitting more general regions and more general functions in terms of which the initial conditions of the problem are given. The method used for finding particular solutions consists in assuming a solution of a special form, substituting it into the nonlinear differential equation of the problem, and imposing further sufficient conditions on the separate terms of the equation to satisfy it. *H. P. Thielman.*

Source: Mathematical Reviews, Vol 12 No. 8

Galin, L.A.

Galin, L. A. Some problems of unsteady motion of ground water. Akad. Nauk SSSR. Prikl. Mat. Mek. 15, 655–678 (1951). (Russian)

The problems considered deal with the outflow of water from mounds of ground water in layers of infinite or finite depths. The solution gives the height of the free surface of the water, and the velocity potentials in term of complex integrals of the Cauchy type.

H. P. Thielman

Source: Mathematical Reviews, Vol 1 No. 4

GALIN, L. A.

Among the papers presented by the First All-Union Conference on Aerohydrodynamics (8-13 Dec 1952) convened by the Institute of Mechanics, Academy of Sciences USSR, was:

"Some Questions of Unsettled Filtration" by Galin, L. A. (Institute of Mechanics, Academy of Sciences, USSR)

SO: Izvestiya AN USSR, Otdeleniye Tekhnicheskikh Nauk, No. 6, Moscow, June 1953, (W-30662, 12 July 1954)

GALIN, L. A.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 511 - I

BOOK Call No.: QA935.G3

Author: GALIN, L. A.
Full Title: CONTACT PROBLEMS OF THE THEORY OF ELASTICITY
Transliterated Title: Kontaktnyye zadachi teorii uprugosti

PUBLISHING DATA
Originating Agency: None
Publishing House: State Publishing House of Technical and Theoretical Literature
Date: 1953 No. pp.: 264 No. of copies: 4,000
Editorial Staff: None

PURPOSE: A book for the use of scientists and technicians whose work is connected with the theory of elasticity.

TEXT DATA
Coverage: This book contains results of the author's work in the field of composite contact problems of the theory of elasticity. The author mentions other authors' works only when they are closely connected with his own research. The author considers two and three dimensional problems resulting from the contact of elastic bodies. He gives special attention to the analysis of the principles of stamping work. A long (18 pages) introduction gives the history of the development of this branch of the theory of elasticity in the USSR and the names of prominent Russian scientists in this field. Diagrams, tables.

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Kontaktnyye zadachi teorii uprugosti AID 511 - I

No. of References: 54 Russian, dated 1906—1951, and 15 non-Russian, dated 1885—1950.
Facilities: A number of names of Russian scientists appear in the introduction.

GALIN, L. A. (Moscow)

"On the Impact of a Body on the Surface of a Compressible Liquid."
"The Heat Transfer Equation and its Application in Mechanics."

reports presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

GALIN, L.A.(Moskva); KARPYCHEVA, Z.F. (Moskva); SHKIRICH, A.R. (Moskva)

Spreading out of the lens of ground waters. Prikl.mat.i mekh. 24 no.3:559-562 My-Je'60. (MIRA 13:10)
(Seepage)

88755

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S/040/60/024/006/009/024
C 111/ C 333

AUTHOR: Galin, L. A. (Moscow)

TITLE: On the Dispersion of Radiation in a Medium With Variable Optic Properties

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol. 24, No. 6, pp. 1037-1041

TEXT: The instationary dispersion and absorption of the light entering from the exterior (intensity I_0 = const) is considered in a medium, the optical properties of which depend on the time t and on the local coordinate z. Assume: a.) The absorption coefficient $\varkappa^*$ is proportional to the concentration $\xi(z,t)$ of the absorbing medium $\varkappa^* = \varkappa\xi(z,t)$. b.) The ralis β of the sets of the scattered and of the absorbed radiations is constant β = const and independent of the dispersion of the particles. Let

$$\tau = \varkappa \int_0^z \xi(\zeta, t)\, d\zeta \tag{1.4}$$

and $B(\tau)$ is assumed to be the quantity of radiation which is absorbed by a unit of volume per unit of time. Let furthermore

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C 111/ C 333

On the Dispersion of Radiation in a Medium With Variable Optic Properties

(1.15) $$\Phi(\tau) = \int_{\tau}^{\infty} B(\omega)\, d\omega$$

The author deduces the relation

(1.23) $$t = \frac{1}{\mu} \int_{-\xi_0 z}^{\tau} \frac{d\xi}{\Phi(\xi) - \Phi(0)}$$

where $\mu = \lambda\alpha$, $\xi_0 = \xi(z,0)$, λ is a factor of proportionality which, connects the velocity of the change in concentration with the intensity of the absorbed radiation. If (1.23) is reversed and τ is determined from this as function of z and t, then it holds

(1.13) $$\xi(z,t) = \frac{1}{\alpha} \frac{\partial \tau}{\partial z} ,$$

whereupon $\Phi(\tau)$ can be determined from

(1.7) $$B(\tau) = I_0 e^{-\tau} + \frac{\beta}{2} \int_0^{\infty} B(\omega)\, Ei\,(|\tau - \omega|)\, d\omega$$

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S/040/60/024/006/009/024
C 111/ C 333

On the Dispersion of Radiation in a Medium With Variable Optic Properties

and (1.15). The integral equation (1.7) is due to Chandrasekhar, and it holds

$$Ei(s) = \int_s^\infty \frac{e^{-x}}{x}\, dx$$

If $I_o = I_o(t) \neq$ const, then τ must be determined from

$$(1.26) \qquad \frac{1}{\lambda\alpha} \int_{\alpha\xi_0 z}^{\tau} \frac{d\xi}{\phi(\xi) - \phi(0)} = \int_0^t I_0(t)\, dt$$

If only absorption without dispersion takes place, then one has to put $\phi(\tau) = I_o e^{-\tau}$ and it holds

$$(2.11) \qquad \xi(z,t) = \xi_0 \frac{e^{\alpha\xi_0 z}}{e^{\alpha\lambda I_0 t} - 1 + e^{\alpha\xi_0 z}} .$$

There are 2 references: 1 Soviet and 1 Indian.

SUBMITTED: July 17, 1960

Card 3/3

GALIN, L.A. (Moscow) :

"Stress-strain relation for fibre-glass reinforced plastics under slow and high-speed loading."

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

CALIN, L.A. (Moscow):

"Facture of a solid produced by a fluid or gas jet".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

L 11578-66 EWT(d)/EWT(m)/EWP(w)/EWP(j)/T/ETC(m)-6 IJP(c) WW/EM/RM

ACC. NR: AP6002320 SOURCE CODE: UR/0373/65/000/006/0053/0058

49
48
B

AUTHOR: Galin, L. A. (Moscow)

ORG: none

TITLE: Action of a vibration load on polymer materials

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 6, 1965, 53-58

TOPIC TAGS: polymer, vibration effect, stress analysis, temperature distribution

ABSTRACT: The vibration load on a strip (see Fig. 1) of polymer material is investi-

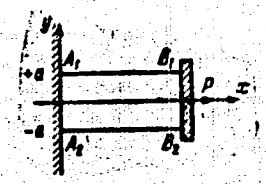

Fig. 1.

gated under plane stress conditions. The applied load P is assumed to be harmonic, with a constant amplitude, and upon deformation the strip sections remain plane. It is also assumed that heat conduction occurs through the sides A_1B_1 and A_2B_2. The deformation varies with time as follows: $\varepsilon_x = \varepsilon_x^0 \cos \omega t$.

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L 14578-66

ACC NR: AP6002320

and the stress:

$$\sigma_x = \sigma_x^0 (T(y), \omega) \cos(\omega t - \varphi (T(y), \omega)).$$

The relationship between the deformation and the stress is assumed to be given under visco-elastic conditions

$$\sigma_x = \int_{-\infty}^{t} K(T, t-\tau)\, e_x\, d\tau$$

such that the elastic modulus has two components, E_1 and E_2, determined experimentally

$$E_1(T) = A, \qquad E_2(T) = B + CT.$$

The governing thermal-stress equation then becomes

$$\frac{\partial T}{\partial t} = a^* \frac{\partial^2 T}{\partial y^2} + \mu^* \frac{E_2(T, \omega)}{M} \qquad \left(\mu^* = \frac{\lambda k (P^*)^2 \omega}{2c}\right)$$

where

$$\left(M = \left[\int_{-a}^{a} E_1(T, \omega)\, dy\right]^2 + \left[\int_{-a}^{a} E_2(T, \omega)\, dy\right]^2\right).$$

The solutions of this equation are given for two cases: a steady case which leads to a transcendental algebraic equation and the unsteady case leading to a series solution. Orig. art. has: 31 equations and 3 figures.

SUB CODE: 20, 11/ SUBM DATE: 06Aug65/ ORIG REF: 002/ OTH REF: 002

Card 2/2

GALIN, L.A. (Moskva)

Effect of vibratory loading on polymer materials. Izv. AN SSSR. Mekh. no.6:53-58 N-D '65. (MIRA 18:12)

ACC NR: AP6011637 UR(e) JD

SOURCE CODE: UR/0020/66/167/003/0543/0546

AUTHORS: Galin, L. A. (Corresponding member AN SSSR); Cherepanov, G. P.

ORG: Institute of Problems in Mechanics, Academy of Sciences SSSR (Institut problem mekhaniki Akademii nauk SSSR)

TITLE: Self-sustaining failure of a stressed brittle body

SOURCE: AN SSSR. Doklady, v. 167, no. 3, 1966, 543-546

TOPIC TAGS: elastic theory, structural stability, structural property, wave propagation, brittle fracture

ABSTRACT: The following hypothesis is developed: Any body, initially in the uniform stressed condition, then suddenly exposed to conditions in which its surface is freed from loading, undergoes a self-sustaining failure if the potential elastic energy per unit volume of the body exceeds a certain critical value which is a material constant (for similar technology, similar temperature, and other like circumstances). This critical value is of the order $(1/2E)\sigma_+^2$, where E is Young's modulus, and σ_+ is the compressive strength of the material. A uniform model is proposed for representing the problem on self-sustaining failure. Principal stresses are defined and the laws of conservation of mass, momentum, and energy are used in

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UDC: 539.8

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L 06233-67 EWP(e)/EWT(m) WH
ACC NR: AP6030007 SOURCE CODE: UR/0020/66/169/005/1034/1036

AUTHOR: Galin, L. A. (Corresponding member AN SSSR); Ryabov, V. A.; Fedoseyev, D. V.; Cherepanov, G. P.

ORG: Institute of Problems of Mechanics, Academy of Sciences SSSR (Institut problem mekhaniki Akademii nauk SSSR); Institute of Physical Chemistry, Academy of Sciences SSSR (Institut fizicheskoy khimii Akademii nauk SSSR)

29
B

TITLE: Failure in high strength glass

SOURCE: AN SSSR. Doklady, v. 169, no. 5, 1966, 1034-1036

TOPIC TAGS: glass property, Young modulus, hydrofluoric acid

ABSTRACT: The failure of glass due to internal defects was investigated using test samples of window glass with dimensions 60 × 60 mm and a thickness of 1.7-3.2 mm. The glass had approximately the following chemical composition: SiO_2--72%, Na_2O--15%, MgO--3%, CaO--8%, Al_2O_3--1.5-2%. Surface defects to a depth of 100 microns were removed by treating the glass in foaming hydrofluoric acid. The samples were tested for symmetric flexural strength using a maximum load of 10,000 kg-wt. The test samples were supported in a square frame covered with soft insulation. Typical parameters of the glass samples were as follows: Young's modulus of $6 \cdot 10^7$ kg-wt/cm^2, thickness of 0.2 cm, a breaking force of approximately 500 kg-wt, and a characteristic transverse

UDC: 539.8

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ACC NR: AP6030007

dimension of approximately $5 \cdot 10^{-3}$ cm for the needle fragments. The experiments showed that the development of cracks leading to the failure of high strength glass samples was nonstationary and corresponded to the initial stage of the nonstationary development of cracks from the original defects. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: 22Apr66/ ORIG REF: 006/ OTH REF: 002

Card 2/2

GALIN, M.A.

GALIN, A.I.; GALIN, M.A.

Hygrometer for leather production. Leg.prom. 14 no.7:21-24 Jl '54.
(Leather industry) (Hygrometry) (MLRA 7:7)

GALIN, M.A.

Useful fibrous plant. Priroda 41 no.7:114 Jl '53. (MLRA 6:6)

1. Gosudarstvennyy Nikitskiy botanicheskiy sad imeni V.M. Molotova.
(Rushes)

GALIN, M.A.

In the forests of the southern Crimean coast. Geog.v shkole 19 no.1:16-19 Ja-F '56. (MLRA 9:5)
(Crimea--Forests and forestry)

GALIN, M.A.

The rule of precedence. Bot.zhur.41 no.4:578-581 Ap '56. (MLRA 9:9)
(Phytogeography)

GALIN, M.A.

Effect of soil-forming parent rocks on soil and vegetation in the forest zone. Biul. MOIP. Otd. biol. 61 no.1:82-83 Ja-F '56.
(MLRA 9:6)

(FORMST SOILS) (BOTANY--ECOLOGY)

L 2198-66 EWT(1)/FCC GW

ACC NR: AP6011366 SOURCE CODE: UR/0362/66/002/003/0236/0247

AUTHOR: Galin, M. B.; Popov, A. A.; Rudenko, S. I.

ORG: Mirovoy Meteorological Center (Mirovoy meteorologicheskiy tsentr)

TITLE: Propagation of disturbances in a baroclinic atmosphere in the presence of radiation and turbulent thermal conductivity

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 3, 1966, 236-247

TOPIC TAGS: turbulent heat transfer, atmospheric model, adiabatic process

ABSTRACT: A four-level model (50, 150, 250, and 950 mbar levels) of the atmosphere was investigated by analyzing the stability of a zonal stream with respect to wave disturbances. The data were compared with those computed on the basis of Galin's two-level model (1959). The application of the four-level model to the study of the disturbance was partially based on theoretical studies by Galin (1964) and on differential equations of vortex transfer. The heat transfer in the atmosphere in the model was determined on the basis of a formula developed by Glinov (1964). The data show that the four-level model gives four wave types, one of which is similar to the Rossby wave. The Rossby waves and a second wave type correspond to the two wave types of the two-level model. The four-level adiabatic model is characterized by a new type of instability as compared with the two-level model. It was found that the stability cha-

UDC: 551.511.32

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L 24198-66
ACC NR: AP6011366

racteristics of the model are greatly affected by the parameters of thermal stratification (γ). Orig. art. has: 10 figures, 25 formulas, 2 tables. [14]

SUB CODE: 08/ SUBM DATE: 03Nov65/ ORIG REF: 006/ OTH REF: 002/

ATD PRESS: 4245

Card 2/2

GALIN, M.A.

Candling device for in vivo observation of the internal structure of eggs. Est. v shkole no.5:90 S-O '54. (MLRA 7:9)
(Galin, M.A.)

SOV/49-59-4-8/20

AUTHOR: Galin, M. B.

TITLE: On the Stability of Large Scale Atmospheric Motion (Ob ustoychivosti atmosfernykh dvizheniy planetarnogo masshtaba)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 4, pp 570-580 (USSR)

ABSTRACT: In the investigation of large-scale motions of the atmosphere it is necessary to consider the Earth as a sphere. Therefore, the expressions (1) and (2) should be applied where ψ - function of the current, a - Earth radius, V_z - vertical velocity, $\tilde{\rho}(z)$ - density, $\tilde{\xi} = p(z)/\tilde{p}(0)$ - independent variable, $\tilde{p}(z)$ - pressure, T_1 - temperature. When the conditions $V_o = 0$ for $z = 0$ and $(\tilde{\rho}V_z) \to 0$ for $z \to \infty$ are introduced, these expressions can be defined as Eqs (3), where $\alpha(z)$ - index of the circulation not affected by the latitude; ψ_1' and ψ_3' - functions defined by Eq (4). By substituting Eq (4) into Eq (3), Eq (5) is obtained for

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On the Stability of Large Scale Atmospheric Motion

$F_1 = C_1 = P_n^m$, $F_3 = C_3 = P_n^m$ and σ defined from Eq (6).

The relationship between F_1 and F_3 can be expressed as Eq (7). It should be noted that $\sigma_n^{1,2} + \alpha_2$ and $K^{1,2}$ depend on $\Delta\alpha$, i.e. on the difference between the indexes of circulation in the given areas and not on the indexes themselves due to $\sigma_n^{1,2} + \alpha_3 = \sigma_n^{1,2} + \alpha_2 - V$. The condition of stability is governed by the expressions (8) or (9), where the value $\Lambda = \nu(\nu + 1)\Gamma$ defines limits of stability in the plane $(\nu, \Delta\alpha)$. The curve of stability (Fig 1) has two asymptotes at $\nu = 0$ and $\nu = \nu_{rim}$ corresponding to $\Lambda = 2$. The following parameters are assumed: $\gamma = 0.006^\circ/m$, $T_1 = 250^\circ$, $\theta = 45^\circ$. Then $\Gamma = 1.85 \times 10^{-2}$ and

$$\Delta\bar{\alpha}_{min} = \bar{B} = 37 \quad (\bar{\alpha} = \frac{\alpha}{\omega} .1000) \quad .$$

For $\Delta\alpha > \Delta\alpha_{min}$ such an interval $\nu_1 < \nu < \nu_2$ exists where unstable disturbances can occur. Fig 2 shows the values of

On the Stability of Large Scale Atmospheric Motion

$\bar{\sigma}_n^1$ and $\bar{\sigma}_n^2\left(\bar{\sigma}_n = \frac{\sigma_n + \alpha_2}{\omega} \cdot 1000\right)$ in relation to λ for $\bar{\Delta}\alpha = 23$ (Curve 1) and $\Delta\alpha = 53$ (Curve 2). From the expressions (4) and their solutions (Eqs (10) and (11)), the formula (12) can be derived which can also be written as Eq (13) and shown in the form of graphs in Figs 3 and 4. As an example a 24-hour prognosis chart was calculated for the two contour charts 700 x 300 mb. The results are illustrated in Figs 5 and 10, showing the synoptic charts for December 9, 1957 (Figs 5 and 6) and December 10 (Figs 7 and 8) and the forecast chart

On the Stability of Large Scale Atmospheric Motion

for December 10 (Figs 9 and 10). There are 10 figures and 11 references, of which 5 are Soviet, and 6 are English.

ASSOCIATION: Akademiya nauk SSSR, Institut prikladnoy geofiziki (Academy of Sciences, USSR, Institute of Applied Geophysics)

SUBMITTED: August 13, 1958.

S/020/61/138/005/011/025
B104/B205

3,5110 25311

AUTHOR: Galin, M. B.

TITLE: Separation of long waves in the hydrodynamic forecasting of pressure fields in the medium and upper troposphere on the northern hemisphere of the Earth

PERIODICAL: Akademiya nauk SSSR. Doklady, v.138, no. 5, 1961, 1073-1075

TEXT: Following a series of papers by Ye. N. Blinova (DAN, 39, no. 7, 284 (1943); DAN, 111, no. 6, 975 (1956)) the author solves the problem of long-range forecasting for altitudes of the 700-mb and 300-mb constant-pressure surface in linear approximation. The equations for eddy diffusion and heat conduction are linearized as in Blinova's papers, and the angular velocity of zonal currents is assumed to depend on the altitude but not on the geographic latitude. The vertical velocity on the Earth's surface is taken to be equal to zero, and the same is assumed for the vertical mass flow at the upper atmospheric boundary. The relationship between the velocity field and the pressure field is expressed by the relation $\psi = gz/l$, where ψ is the stream function, z the altitude of the

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constant-pressure surface, and l is the Coriolis parameter. For l, a mean value comprising the whole hemisphere is assumed. The author has formulated already in a previous paper the forecast equation for this case:

$$\left(\frac{\partial}{\partial t}+\alpha_1\frac{\partial}{\partial\lambda}\right)\left[\Delta z_1+\frac{1}{\Gamma}(z_1-z_3)\right]+\left[2\omega+\frac{1}{\Gamma}(\alpha_1-\alpha_3)\right]\frac{\partial z_1}{\partial\lambda}=0,$$
$$\left(\frac{\partial}{\partial t}+\alpha_3\frac{\partial}{\partial\lambda}\right)\left[\Delta z_3-\frac{1}{\Gamma}(z_1-z_3)\right]+\left[2\omega-\frac{1}{\Gamma}(\alpha_1-\alpha_3)\right]\frac{\partial z_3}{\partial\lambda}=0, \qquad (1)$$

(Izv. AN SSSR, ser. geofiz., no. 4, 570 (1959)). Here, z_1 and z_2 are the altitudes of the 300 and 700 mb constant-pressure surfaces, α_1 and α_3 are the indices of circulation on these surfaces, ω is the angular velocity of the Earth's rotation. Γ is the parameter introduced by Blinova, for which, on the hemisphere considered here the equation reads: $\Gamma = \left\{(\gamma_a - \gamma)T_1/4\omega^2\cos^2\theta\right\}_{mean}$. Here, T_1 is the temperature averaged over the altitude, and γ_a is the adiabatic temperature gradient. For $\alpha_1 - \alpha_3 > 0.037$ the system of equations (1) has unstable solutions. The

amplitudes of the waves described by these solutions, grow exponentially with time. The stable solutions satisfying the initial conditions have the form

$$z_3 = \sum_{m=1}^{\infty}\sum_{n=m}^{\infty} [M_n^m(t)\cos m\lambda + N_n^m(t)\sin m\lambda]\, P_n^m(\cos\theta), \qquad (2)$$

$$z_1 = \sum_{m=1}^{\infty}\sum_{n=m}^{\infty} [\overline{M}_n^m(t)\cos m\lambda + \overline{N}_n^m(t)\sin m\lambda]\, P_n^m(\cos\theta);$$

$$M_n^m(t) = C_{1n}^m \cos m\sigma_n^1 t + D_{1n}^m \sin m\sigma_n^1 t + C_{2n}^m \cos m\sigma_n^2 t + D_{2n}^m \sin m\sigma_n^2 t,$$

$$N_n^m(t) = D_{1n}^m \cos m\sigma_n^1 t - C_{1n}^m \sin m\sigma_n^1 t + D_{2n}^m \cos m\sigma_n^2 t - C_{2n}^m \sin m\sigma_n^2 t. \qquad (3).$$

$\overline{M}_n^m$ and $\overline{N}_n^m$ are calculated with formulas (3) by substitution of C_n^m and D_{nn}^m by $\overline{C}_n^m$ and $\overline{D}_n^m$. In general, the following equations are valid:

$$C_{1n}^m = \beta_n^1 A_n^m + \beta_n^2 \bar{A}_n^m, \quad \bar{C}_{1n}^m = \beta_n^4 A_n^m + \beta_n^3 \bar{A}_n^m,$$
$$D_{1n}^m = \beta_n^1 B_n^m + \beta_n^2 \bar{B}_n^m, \quad \bar{D}_{1n}^m = \beta_n^4 B_n^m + \beta_n^3 \bar{B}_n^m,$$
$$C_{2n}^m = \beta_n^3 A_n^m - \beta_n^2 \bar{A}_n^m, \quad \bar{C}_{2n}^m = \beta_n^1 \bar{A}_n^m - \beta_n^4 A_n^m, \qquad (4)$$
$$D_{2n}^m = \beta_n^3 B_n^m - \beta_n^2 \bar{B}_{2n}^m, \quad \bar{D}_{2n}^m = \beta_n^1 \bar{B}_n^m - \beta_n^4 B_n^m,$$

$$\beta_n^1 = -k_n^2 \beta_n^2, \qquad \beta_n^2 = \frac{B - 2\Lambda V}{2\sqrt{B^2 - \Lambda^2(4-\Lambda^2)V^2}},$$
$$\beta_n^3 = k_n^1 \beta_n^2, \qquad \beta_n^4 = \frac{B + 2\Lambda V}{2\sqrt{B^2 - \Lambda^2(4-\Lambda^2)V^2}}; \qquad (5)$$

$$k_n^{1,2} = 1 + \Lambda - \frac{B - 2V}{\sigma_n^{1,2} + \alpha_3},$$
$$\sigma_n^{1,2} = -\frac{\alpha_1 + \alpha_3}{2} + \frac{(1+\Lambda)B}{\Lambda(\Lambda+2)} \pm \frac{\sqrt{B^2 - \Lambda^2(4-\Lambda^2)V^2}}{\Lambda(\Lambda+2)}, \qquad (6).$$
$$B = 2\omega\Gamma, \quad \Lambda = n(n+1)\Gamma, \quad V = {}^1/_2(\alpha_1 - \alpha_3);$$

The A_n^m, B_n^m, $\overline{A}_n^m$, and $\overline{B}_n^m$ are expansion coefficients of the initial fields, expanded in spherical harmonics. Computations by the abovementioned scheme were made with a "Ural" computer. They took place in three stages. In the first stage, the initial fields AT-700 and AT-300 were expanded in series of spherical harmonics, i.e., the abovementioned coefficients were calculated. In the second stage, formulas (5) and (6) served for finding the values of β_n^1, β_n^2,... β_n^4, σ_n^1 and σ_n^2, and functions M_n^m, N_n^m, $\overline{M}_n^m$, and $\overline{N}_n^m$, i.e., a forecast of expansion coefficients was offered. The fields for forecasting were formulated in the third stage. To estimate the accuracy of forecast, the correlation coefficient r between observed and predicted changes of the altitude of the constant-pressure surface and the mean absolute error was calcualted. On the first day, correlation was sufficiently high, while a considerable drop was noticed on the following days. This sharp drop is explained by the long waves being insufficiently taken account of. An analysis of the material shows the long pressure waves to be steady. They display a small phase shift with respect to a middle position from one day to another. When formulating the forecast

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ACCESSION NR: AT4034673 S/0000/64/000/000/0042/0050

AUTHOR: Galin, M. B.

TITLE: Forecasting zonal circulation on the basis of covariances

SOURCE: AN SSSR. Ob"yedinenny*y meteorologicheskiy vy*chislitel'ny*y tsentr. Gidrodinamicheskiy dolgosrochny*y prognoz pogody* (Hydrodynamic long-range weather forecasting). Moscow, Izd-vo "Nauka," 1964, 42-50

TOPIC TAGS: meteorology, atmospheric circulation, atmospheric zonal circulation, covariance, weather forecasting, long-range weather forecasting

ABSTRACT: An attempt is made to improve the forecasting of zonal circulation. It is shown that there is no need to predict individual nonzonal disturbances in order to predict zonal circulation. The zonal distribution of the current function is derived from the total field of this function by averaging or smoothing along circles of latitude. The problem discussed can be considered as a special case of prediction of the smoothed values of meteorological elements. The method employs the use of statistical covariances. Ye. N. Blinova already has used covariances in solving the problem of prediction of smoothed values of the current function for the mean level of the atmosphere and for a general three-dimensional case (Dokl. AN SSSR, 123, No. 3, 1958; Dokl. AN SSSR, 147, No. 6, 1962). The same

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ACCESSION NR: AT4034673

general approach used by Blinova is applied to this paper for prediction of zonal circulation. General considerations applying to covariances are presented. This is followed by discussion of the prediction of the smoothed values of the current function field; the problem is presented in a general formulation and in the simplest (two-level) three-dimensional variant. The article concludes with the formulas to be used in prediction of zonal circulation. This paper should be studied together with another by I. P. Smirnov in the same source (Gidrodinamicheskiy dolgosrochnyy prognoz pogody, Moscow, 1964, 51-61). Orig. art. has: 44 formulas.

ASSOCIATION: Ob"yedinennyy meteorologicheskiy vychislitel'nyy tsentr AN SSSR (Joint Meteorological Computation Center AN SSSR)

SUBMITTED: 22Nov63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: ES NO REF SOV: 006 OTHER: 002

Card 2/2

L 19685-65 EWT(1)/FCC AEDC(a) GW

ACCESSION NR: AT4048451 S/3118/64/000/002/0031/0032

AUTHOR: Galin, M.B.

TITLE: Hydrodynamic short-range weather forecasting using linear theory

SOURCE: Mirovoy meteorologicheskiy tsentr. Trudy*, no. 2, 1964, Voprosy* gidrodinamicheskogo dolgosrochnogo prognoza pogody* (Problems in hydrodynamic long-range weather forecasting), 21-32

TOPIC TAGS: weather forecasting, short-range weather forecasting, hydrodynamic weather forecasting, atmospheric pressure, long-range weather forecasting

ABSTRACT: Various methods of hydrodynamic short-range weather forecasting, both linear and nonlinear, now are known. Although nonlinear models provide a more complete description of the behavior of the real atmosphere in comparison with linear models, the latter still retain importance. Linear models have a number of important advantages since there is no accumulation of computation errors with an increase in the time of the forecast. The predicted field for any time is computed from initial data, bypassing intermediate observations. This makes it possible to effect a considerable increase in the time for which the forecast is made. Another important advantage of

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L 19685-65

ACCESSION NR: AT4048451

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linear forecasts is the closed form of the solution (finite sum of precise solutions) which makes it possible to trace graphically the dependence of the solution on the principal physical parameters of the model. Finally, there is a saving of time when the computations are made on high-speed electronic computers. These advantages are illustrated in this paper, originally presented at the Vsesoyuznaya nauchnaya konferentsiya po dolgosrochny*m prognozam pogody* (All-Union Scientific Conference on Long-Range Weather Forecasting), 20 March 1963. Specifically, the author fully describes the basis of a baroclinic two-level model for forecasting for the AT_{700} and AT_{300} levels and forecasting vertical currents at the 500-mb level for the northern hemisphere. The behavior of long waves is taken into account. Estimates of the probable success of forecasts for a period up to 10 days are given for each day. Orig. art. has: 37 formulae, 5 figures and 4 tables.

ASSOCIATION: Mirovoy meteorologicheskiy tsentr (World Meteorologic Center)

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 006 OTHER: 001

Card 2/2

L 4138-66 EWT(1)/FCC GW

ACCESSION NR: AT5024854 UR/3118/65/000/005/0025/0034

AUTHOR: Galin, M. B. 44,55

TITLE: Hydrodynamic forecast of meteorological elements in the troposphere and the lower stratosphere, taking into consideration radiation and turbulent heat transfer

SOURCE: Mirovoy meteorologicheskiy tsentr. Trudy, no. 5, 1965. Dinamika atmosphernykh dvizheniy planetarnogo masshtaba i gidrodinamicheskiy dolgosrochnyy prognoz pogody (Dynamics of atmospheric movements on a planetary scale and hydrodynamic long-range weather forecasting), 25-34

TOPIC TAGS: meteorological phenomenon, 12,44,55 stratosphere, troposphere, turbulent heat transfer, radiation heat transfer, vorticity transfer

ABSTRACT: A quasi-solinoidal, four-level atmospheric model is studied in detail. The earth's spherical surface is divided into four pressure levels: 50, 150, 250, and 950 millibars. A momentum vorticity transport and an energy equation are written, including radiation heat transfer terms, and are linearized as follows:

$$\begin{cases} \psi = -a^2\alpha(\xi)\cos\theta + \psi', \\ T' = T_0 + M(\xi)\sin^2\theta + T'', \\ F = \overline{F} + F'', \end{cases} \qquad (1)$$

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where ψ is the stream function, F is the radiation density term, and the double primes denote unstationary nonzonal components of the flow field. The corresponding linearized equations then become

$$\left(\frac{\partial}{\partial t}+\alpha\frac{\partial}{\partial\lambda}\right)\Delta\psi''+2(\alpha+\omega)\frac{\partial\psi''}{\partial\lambda}=-2\omega a^2\cos\theta\frac{\partial W}{\partial\xi},$$
$$\left(\frac{\partial}{\partial t}+\alpha\frac{\partial}{\partial\lambda}\right)T''-\frac{2M}{a^2}\cos\theta\frac{\partial\psi''}{\partial\lambda}+\frac{RT_{cp}(\gamma_a-\gamma)}{g}\frac{W}{\xi}=F''. \qquad (2)$$

These equations are divided into 20 levels along the altitude ($\Delta\xi = 0.5$). In addition, the vorticity transport equation is written in four levels, and the energy equation is divided into three heat flow levels. A detailed numerical solution scheme is developed, and the stream function of the k-th level is expressed by a series of the form

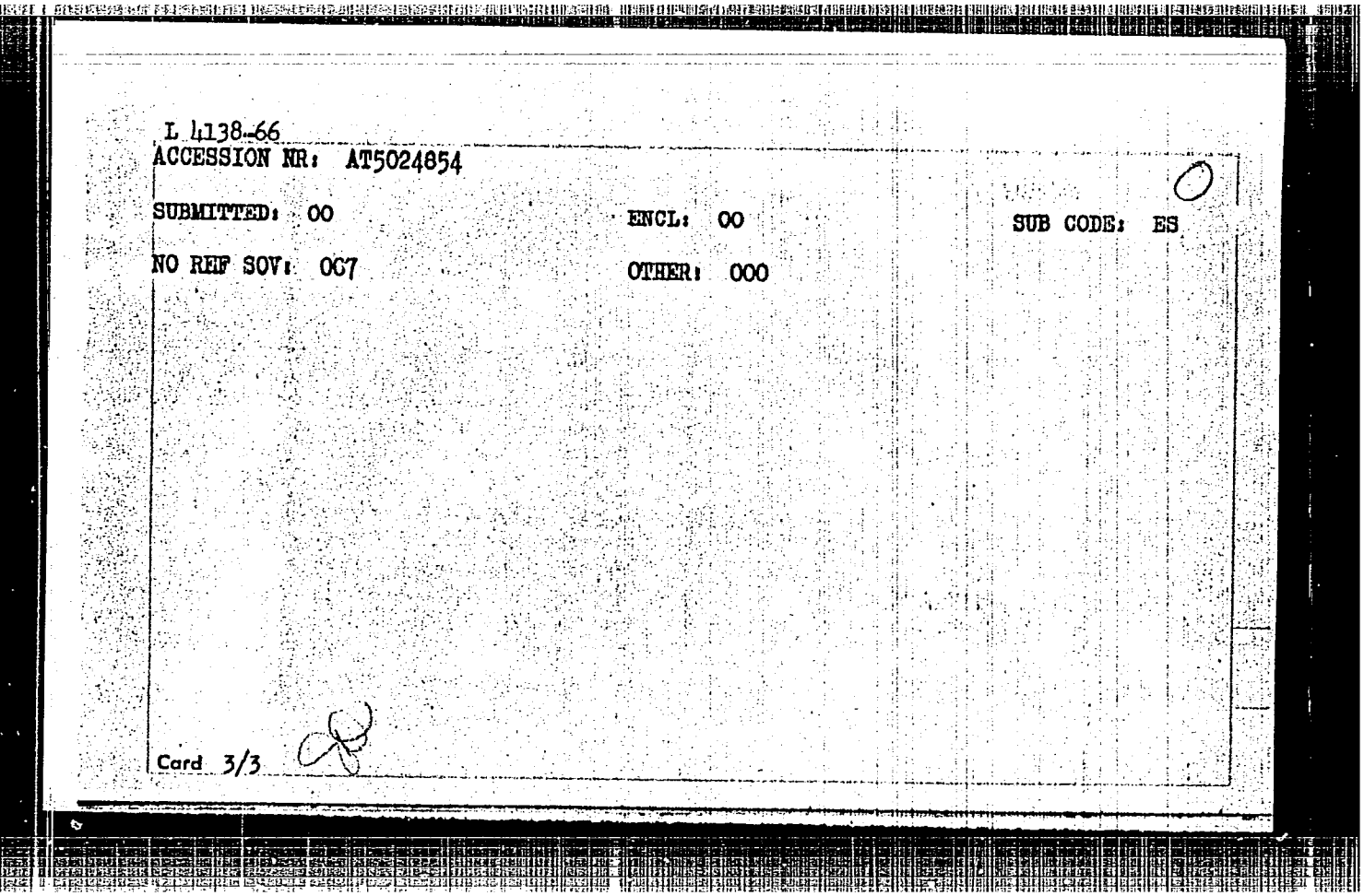
$$\psi_k=\sum_m\sum_n\left(M_{kn}^m\cos m\lambda+N_{kn}^m\sin m\lambda\right)P_n^m(\cos\theta), \qquad (3)$$

and evaluated numerically as the prognostic meteorological field. "The author thanks A. K. Popov and S. I. Rudenko for aiding him in the computations." Orig. art. has: 43 equations and 2 tables. 44,55

44,55

ASSOCIATION: Mirovoy meteorologicheskiy tsentr (World Meteorological Center)

44,55



L 4138-66
ACCESSION NR: AT5024854

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 007 OTHER: 000

Card 3/3

GALIN, M.B.

Hydrodynamic forecasting of meterological elements in the troposphere and lower stratosphere taking radiation and turbulent thermal conductivity into consideration. Trudy MMTS no.5:25-34 '65. (MIRA 18:12)

L 20976-66 EWT(1)/FCC GW
ACCESSION NR: AT5024855 UR/3118/65/000/005/0041/0054

AUTHORS: Galin, M. B.; Glazunova, A. M. 41 B+1

TITLE: Experiment in formulating hydrodynamic forecasts for a period up to ten days

SOURCE: Mirovoy meteorologicheskiy tsentr. Trudy, no. 5, 1965. Dinamika atmosfernykh dvizheniy planetarnogo masshtaba i gidrodinamicheskiy dolgosrochnyy prognoz pogody (Dynamics of atmospheric movements on a planetary scale and hydrodynamic long-range weather forecasting), 41-54

TOPIC TAGS: hydrodynamics, weather forecasting, approximation method, stability criterion, atmospheric movement

ABSTRACT: A baroclinic, two-dimensional, linear atmospheric model 12,44,55 is formulated for the purpose of predicting weather conditions. As a basis for the analysis, quasi-solenoidal equations of the spatial problems on a sphere are used at 700 and 300 millibars. Linearizing the equations relative to the zonal flow stream function, one has

$$\left[\frac{\partial}{\partial t}+\alpha_1\frac{\partial}{\partial\lambda}\right]\left[\Delta\psi_1'+\frac{1}{\Gamma}(\psi_3'-\psi_1')\right]+\left[2(\omega+\alpha_1)-\right.$$
$$\left.-\frac{1}{\Gamma}(\alpha_3-\alpha_1)\right]\frac{\partial\psi_1'}{\partial\lambda}=0$$

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$$\left[\frac{\partial}{\partial t}+\alpha_3\frac{\partial}{\partial\lambda}\right]\left[\Delta\psi_3'-\frac{1}{\Gamma}(\psi_3'-\psi_1')\right]+\left[2(\omega+\alpha_3)+\right.$$
$$\left.+\frac{1}{\Gamma}(\alpha_3-\alpha_1)\right]\frac{\partial\psi_3'}{\partial\lambda}=0$$

where ψ_1' and ψ_3' are stream functions signifying departures from the zonal magnitudes at levels of 300 and 700 millibars, and α_1 and α_3 are circulation indices at these levels. The stability criteria for the problem are given by

$$\frac{\alpha_1-\alpha_3}{\omega}<2\Gamma=0{,}037.$$

The solution of these equations for ψ_1' and ψ_3' is obtained in double series in terms of spherical harmonics. In the analysis, the following geostrophic approximation is used $\psi=(g/f)H$, H - altitude of the isobaric surface. The forecast analyses were made in two regions. One, in latitude band $\theta = 20\text{-}50^0$, $\chi = 0\text{-}350^0$, the other in $\theta = 20\text{-}50^0$ and $\chi = 30^0$ west longitude to 110^0 east longitude. The duration of the forecast was up to ten days. The results are given in tabular form as the ratio of mean absolute error to the mean variability. In addition, an absolute topographic forecast was made for various days in 1964 (May 7-15) and maps

L 20976-66
ACCESSION NR: AT5024855

were prepared comparing the predicted and actual circulation patterns. Orig. art. has: 9 equations, 7 tables, and 5 figures.

ASSOCIATION: Mirovoy meteorolcgicheskiy tsentr (World Meteorological Center)

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 004 OTHER: 000

Card 3/3 MJS

GALIN, M.P.

Galin, M. P. Transverse oscillations of a plate. Appl. Math. Mech. [Akad. Nauk SSSR. Prikl. Mat. Mech.] 11, 387–388 (1947). (Russian. English summary)

The transverse oscillations of an elastic plate, subjected to a normal load $p(x, y, t)$, are determined approximately by solving the variational equation

$$\int\int_R (D\nabla^2 w - \rho h \partial^2 w/\partial t^2 - p)\delta w dx dy = 0$$

by Galerkin's method. As an illustration free vibrations of a clamped rectangular plate are studied by choosing $w = c(t)(x^2 - a^2)(y^2 - b^2)$ and the results are found to be in excellent agreement with the known exact solution obtained by S. Iguchi [Ing. Arch. 8, 11–25 (1937)].

I. S. Sokolnikoff (Los Angeles, Calif.).

Source: Mathematical Reviews, 1948, Vol 9, No. 3

Galin, M. P.

24-58-3-5/38

AUTHOR: Galin, M. P. (Moscow)

TITLE: Transverse Oscillations of Beams and Plates beyond the Elastic Limit under the Action of Impulse and Shock Loads (Poperechnyye kolebaniya balok i plit za predelom uprugosti pod deystviyem impul'sivnykh i udarnykh nagruzok)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 42-50 (USSR)

ABSTRACT: The problem in the title refers to beams of rectangular cross section when any one of their elements is stressed beyond the elastic limit in the process of loading. The strain-hardening is assumed linear. It is postulated that during the unloading process, the stresses do not exceed the elastic limit. However, during a second and subsequent loading cycles, a transition to a new elastic limit is possible. The analysis is carried out for incompressible material (Poisson's ratio of one-half). The effect of the shear deformation and of the rotational inertia of the elements of mass is ignored. The equations of beam oscillation in the region beyond the elastic limit are set up following A.A.Il'yushin ("Plasticity", Gostekhizdat, 1946). The

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24-58-3-5/38

Transverse Oscillations of Beams and Plates beyond the Elastic Limit under the Action of Impulse and Shock Loads.

equations of motion during the loading and unloading stages (Eqs.1.5 and 1.10) differ by the presence in the unloading stage of a term which can be interpreted as a system of fictitious forces distributed along the beam and determined by the condition of the beam at the start of unloading. The solution of the equations is found by successive approximations after expanding in a series in the deflection shapes of the natural oscillation modes of the elastic problem. Similar approaches are pursued separately for beams and plates. If the beam or plate is subject to a repeated impulse, either further strain-hardening or elastic oscillations may occur. In a numerical example of a beam subject to a distributed impulse the solution is carried out as far as the second approximation. The calculations relating to the numerical example were carried out mainly by Ye. N. Pasenkova and A. I. Mikheyeva.There are 2 graphs and 2 Soviet references.

ASSOCIATION: Institut mekhaniki AN SSSR (Mechanics Institute, Ac.Sc. USSR)

SUBMITTED: March 2, 1957.

Card 2/2

1. Beams--Test methods 2. Beams--Test results 3. Plates--Test method
4. Plates--Test results

SOV/179-59-2-13/40

AUTHOR: Galin, M. P. (Moscow)

TITLE: Propagation of Elasto-plastic Flexure-shear Waves in Beams (Rasprostraneniye uprugo-plasticheskikh izgibno-sdvigovykh voln v balkakh)

PERIODICAL: Izvestiya Akademii nauk SSSR OTN, Mekhanika i mashinostroyeniye, 1959, Nr 2, pp 88-99 (USSR)

ABSTRACT: The material of the beam is assumed to be plastic and incompressible. The equations of motion are set up and solved for the case of a suddenly applied concentrated force. A particular numerical case is considered on the basis of the solution, with special reference to discontinuities in the transverse forces and bending moments. Thanks are expressed to D. Ye. Levit for checking some of the formulae, and to T. N. Terebilina and L. N. Kolobkova for assistance with the calculations. There 5 references, 1 French, 1 English and 3 Soviet.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics, Academy of Sciences USSR)

SUBMITTED: June 17, 1958.

Card 1/1

A. P.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

35. B. M. Borodacher (Kuibeshev): On the solution of the dynamic contact problem for a half-space under conditions of axial symmetry.

36. J. Brilla (Bratislava). Anisotropic plates with discontinuous supports.

37. B. M. Broude (Moscow): On the essential non-linearity of certain problems on column stability.

38. L. G. Buglov (Kiev), S. V. Serensen (Moscow): On the determination of safety factors under alternating random loads.

39. A. V. Burlakov (Kharkov): An experimental investigation of creep of turbine diaphragm models.

40. E. P. Burmistov (Saratov): On the stability of constructionally anisotropic circular ring plates.

41. St. Balan, V. Petcu, S. Rautu (Bucharest): The field of application of chromoplasticity.

42. D. B. Vainberg (Kiev): The state of stress of lamellar systems of regular configuration.

43. V. V. Vainshtok (Moscow): Thixotropic properties of lubricants as basis of their rheological characteristics.

44. G. A. Van-Fo-Fi, G. N. Savin (Kiev): Application of Mathieu functions to the investigation of shells.

45. P. M. Varvak (Kiev): Determination of stresses and deformations in massive bodies.

46. B. V. Vedernikov (Gorkii): The flow of bitumens and filled bitumens in pipes.

47. I. I. Vekua, V. I. Mushkhelishvili (Tbilisi): Applications of analytic functions in the theory of elasticity.

48. L. Ia. Viner (Tbilisi), V. V. Pinadzhian (Erevan): Experimental investigation of the behavior of eccentrically compressed short columns for long loading times.

49. S. V. Vinogradov (Moscow), A. A. Mashkov (Kazan), V. P. Pavlov (Moscow): Investigation of soft plastic bodies under combined states of stress.

50. G. V. Vinogradov, V. P. Pavlov (Moscow): Basic peculiarities of the mechanical properties of plastic lubricants.

51. G. I. Vinokur (Leningrad): Fundamentals of the linear theory of visco-elastic impact.

52. L. I. Vinokurov (Kharkov): The solution of dynamic contact problems for foundations using a simplified model.

53. B. F. Vlasov (Moscow): On the equilibrium equations of thick elastic plates.

54. E. F. Voitkovskii (Iakutsk): The creep of ice and frozen soils under combined stresses.

55. M. P. Volarovich, G. Ia. Voronkov, E. P. Kovalevskii, G. I. Rushana (Moscow): Studies of viscoelastic properties of porous bodies (e.g. peat) by the ultrasonic pulse method.

56. M. P. Volarovich (Moscow), A. Kh. Kim (Minsk): The plane flow of a visco-plastic medium between two planes forming an acute angle.

57. M. P. Volarovich, K. S. Opokin (Moscow): Kinematics and dynamics of the flow of visco-plastic dispersed media past bodies of different shapes.

58. A. N. Volkov (Moscow): On the analysis of a short closed cylindrical shell.

59. S. D. Volkov, N. A. Klinskikh (Sverdlovsk): On the distribution of elastic constants in quasi-isotropic polycrystalline media.

60. I. I. Vorovich (Rostov-na-Donu): A statistical method in the stability theory of shells.

61. I. I. Vorovich (Rostov-na-Donu), A. S. Kosmodamianskii (Saratov): On stress concentration in a plane with an infinite number of holes.

62. G. P. Viazemskii (Leningrad): Foundations of the general engineering theory of elastic beams.

63. S. S. Vialov (Moscow): The laws of deformation of ice.

64. S. S. Vialov (Moscow): The laws of motion of ice crusts and the theory of visco-plastic flow based on research in the Antarctic.

65. N. B. Galileev (Leningrad): A method of obtaining polynomial stress and displacement functions.

66. K. Z. Galimov (Kazan): A contribution to the theory of the finite deformations of thin shells.

67. M. P. Galin (Moscow): The propagation of elastic-plastic [illegible] [redacted] [illegible] waves in the axisymmetrical deformations of shells.

GALIN, M.P. (Moskva)

Propagation of elastic plastic waves of bending and sheer caused by axisymmetric deformations of shells of revolution. Inzh.sbor. 31 '61. (MIRA 14:6)

1. Institut mekhaniki AN SSSR.
(Elastic plates and shells)

29154
S/508/61/031/000/003/009
D234/D305

28.4200 1327

AUTHOR: Galin, M.P. (Moscow)

TITLE: Propagation of elasto-plastic bending and shear waves at axially symmetric deformations of rotational shells

SOURCE: Akademiya nauk SSSR. Institut mekhaniki. Inzhenernyy sbornik, v. 31, Moscow, 1961, 135-170

TEXT: The author discusses the following topics: 1) Deformations, stresses, forces and moments in the shell. 2) Equations of motion of the shell. 3) Equations of the characteristics and their conditions for a system of three quasi-linear equations of second order. 4) Formulation and solution of the problems of mathematical physics for the system of three quasi-linear equations of the 2nd order of hyperbolic type; 4.1) Goursat's problem. Determination of the solution from data on two characteristics. 4.2) Cauchy's problem. Determination of the solution from the initial values. 4.3) First mixed problem. Determination of solution from the

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Propagation of elasto-plastic...

values on a characteristic and a line situated within the angle between the characteristics [Abstracter's note: Author only states here that the method of solution is the same as in 4.1]. 4.4) Second mixed problem (problem with non-moving boundary). Determination of solution from two data on the line s = const. and data on a characteristic or a curve situated within the angle between the characteristics of the first family. 4.5) Third mixed problem (problem with boundary moving with supersonic velocity). 5) Propagation of discontinuities of the deformations in shells. 5.1) Conditions of propagations of strong discontinuities. 5.2) Character of the discontinuity at elastic deformations. 5.3) Character of the discontinuity at elasto-plastic deformations and existence of a special elasto-plastic wave with a weak discontinuity. 5.4) Determination of the front of the wave with weak discontinuity which constitutes the boundary between the zones of elastic and elasto-plastic deformations. 6) Effect of external pressure or instantaneous impulse on a fixed rotational shell having the form of a dome. The curvature of the normals to the middle surface of the shell is

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Propagation of elasto-plastic...

neglected. The material is considered incompressible and having linear strengthening at loading. There are 5 figures and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: P. Naghdy, On the Theory of Thin Shells, Quarterly of Applied Mathematics, v. 14, no. 4, (1957).

SUBMITTED: March 12, 1960

Card 3/3

GALIN, Matvey Yul'yevich

[Pride of the Soviet worker] O gordosti sovetskogo rabochego. Leningrad, Lenizdat, 1958. 58 p. (MIRA 15:3)
(Labor and laboring class)

GALIN, N.

GALIN, N.

Contribution of Soviet technique to the development of naval construction in Rumania.

P. 474 (REVISTA TRANSPORTURILOR) (Bucuresti, Rumania) Vol. 4, no. 11, Nov. 1957

SO: Monthly Index of East European Accessions (MEAI) LC Vol. 7, No. 5. 1958

DUMITRESCU, Adrian, ing.; BUZESCU, Mircea, ing.; GALIN, Nicolae, ing.

Analytical method for designing the technological sections in shipyards. Constr mas 15 no.6:428-438 Je '63.

1. Institutul Tehnologic pentru Constructii de Masini si Electrotehnica.

ISACHENKO, V.P., kand. tekhn. nauk; GALIN, M.M., inzh.

Heat emission during the turbulent motion of a liquid in a collar channel. Izv. vys. ucheb. zav.; energ. 8 no.6:68-73 Je '65. (MIRA 18:7)

1. Moskovskiy ordena Lenina energeticheskiy institut. Predstavlena kafedroy teoreticheskikh osnov teplotekhniki.

ISACHENKO, V.P., kand. tekhn. nauk; GALIN, N.M., inzh.

Heat exission and hydraulic resistance during turbulent flow of a liquid in channels with circular cross section. Trudy MEI no.63:5-16 '65. (MIRA 18:12)

ISACHENKO, V.P., kand. tekhn. nauk; AGABABOV, S.G., kand. tekhn. nauk; GALIN, N.M., inzh.

Experimental study of heat emission and hydraulic resistance in a turbulent flow of water in pipes with unnatural roughness. Trudy MEI no.63:27-38 '65. (MIRA 18:12)

GALIN, N. P.; TARASOV, V. I.; SHISHKOV, Yu. D.

"Thermochemical properties of oxides, halides, oxyhalides and mixed halides of uranium

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64.

GALIN, N.N.

Complications following appendectomy for acute appendicitis in elderly persons. Trudy Inst. im. N.V. Sklif. 9:94-98 '63.
(MIRA 18:6)

1. Leningradskiy nauchno-issledovatel'skiy institut skoroy pomoshchi imeni prof. I.I. Dzhanelidze.

21(0); 1(0); 2(10) PHASE I BOOK EXPLOITATION SOV/2210

Atomnaya energiya v aviatsii i raketnoy tekhnike; sbornik statey (Atomic Energy in Aviation and Rocket Engineering; Collection of Articles) Moscow, Voyen. Izd-vo M-va obor. SSSR, 1959. 500 p. (Series: Nauchno-populyarnaya biblioteka) No. of copies printed not given.

Ed. - Compiler: P.T. Astashenkov, Engineer, Lt.-Col; Ed.: Ya.M. Kader; Tech. Ed.: A.M. Gavrilova.

PURPOSE: This book is intended for officers of the Soviet Armed Forces, members of DOSAAF, and the general reader interested in the uses of atomic engergy and in the development of aviation and rocket engineering.

COVERAGE: This collection of 46 articles, compiled by 28 Soviet scientists and based chiefly on non-Soviet materials, discusses various aspects of the use of atomic engergy in rocketry and aviation. The book surveys the development of atomic and thermonuclear weapons and weapon carriers, lays down the principles of anti-atomic defense, and evaluates the application of nuclear engergy in aviation and rocketry. Fuel and construction materials, as well as actual physical and technological processes involved, are treated briefly. Fundamentals of atomic warfare and combat tactics are discussed at some length. The book is divided into four parts, of which the last consists chiefly of anti-Western propaganda. Section I is devoted to nuclear weapons and their use in aviation. Section II is on anti-atomic defense, especially the defense and decontamination of airfields and aircraft, and defense against radiation. Section III is on the use of nuclear energy in modern aircraft and rocket technology and flight techniques, including some speculations on space travel and on the energy of the future. There are 126 figures and 35 non-Soviet references (some in Russian Translation).

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GALIN, S.

Making reinforced concrete products in tipping forms. Stroitel' 2 no.3:27 Mr '56. (MLRA 9:12)
(Precast concrete)

GALIN, V.

21(2) PHASE I BOOK EXPLOITATION SOV/2708

Atomnaya energiya i flot; sbornik statey (Atomic Energy and the Navy; Collection of Articles) Moscow, Voyenizdat, 1959. 232 p. (Series: Nauchno-populyarnaya biblioteka) Number of copies printed not given.

Ed.: Yu. M. Kader; Tech. Ed.: A.M. Gavrilova; Ed. and Compiler: L. D. Chernous'ko, Engineer, Captain.

PURPOSE: This book is intended for the general reader.

COVERAGE: The papers in this collection discuss in popular style, and on the basis of data published in the Soviet and non-Soviet press, problems of the use of atomic and hydrogen weapons in combat operations at sea. The collection includes reports on the damaging factors of a nuclear explosion and on the immense power of this weapon of mass destruction. A number of articles are devoted to the antinuclear defense of ships and of shore objects, and to the introduction of nuclear power plants in naval vessels. Also included in the collection are papers dealing with the future prospects for naval use of nuclear energy, and with the construction of the world's first atomic icebreaker, the "Lenin", which is expected to play an important part in the further conquest of the Arctic regions. The collection also contains papers published in the journal Sovetskiy flot in 1955 - 1958, in revised and supplemented form.

AVAILABLE: Library of Congress (UF767.C39)

GALIN, V.

PHASE I BOOK EXPLOITATION SOV/6261

Kernenergie und Flotte; Artikelsammlung (Nuclear Energy and the Navy; Collection of Articles) [Berlin] Deutscher Militarverlag [1961]. 232 p. Errata slip inserted. 2000 copies printed.

Translation from the Russian of: Atomnaya energiya i flot.

Translator: Erika Steuk, Lieutenant Commander. Responsibility for German edition: Claus Gruszka, Engineer; Ed.: Klaus Krumsieg.

PURPOSE: This collection of articles is intended for officers of the army, coast guard, and merchant marine.

COVERAGE: The book, a translation from the Russian, contains 25 articles dealing with the application of nuclear weapons to naval combat oporations. Chapters 19 and 25 have been supplemented with additional data for this edition. The devastating features of nuclear explosions are discussed. Attention is also given to the protection of personnel, ships, and coastal facilities against nuclear weapons, and to the present and future applications of nuclear power plants to shipping. No personalities are mentioned. There are 16 references: 10 Russian (including 3 translations from English-language sources), 1 French, 1 German, 1 English, 1 American, and 2 either English or American.

Card ~~4/6~~ 2/2

GALIN, V.L.

Oil and gas potentials of the Saltabak anticline in southern Daghestan. Izv. vys.ucheb. zav.; neft' i gaz no. 5:11-19 '58. (MIRA 11:8)

1. Groznenskiy neftyanoy institut.
(Daghestan--Petroleum geology)
(Daghestan--Gas,Natural--Geology)

GALIN, V.L.

Structural characteristics of the Ekendil'-Adzhinour area in southern Daghestan and its oil and gas potentials. Izv.vys. ucheb.zav.; neft' i gaz 2 no.12:3-10 '59. (MIRA 13:5)

1. Groznenskiy neftyanoy institut.
(Dagestan--Petroleum geology)
(Gas, Natural--Geology)

GALIN, V.L.

Tectonics of the Gubden area (southern Daghestan). Trudy GNI no.21: 46-63 '59. (MIRA 14:5)
(Gubden region--Geology, Structural)

GALIN, V.L.

Geology and gas-bearing prospects of the Gil'yar structure in southern Daghestan. Trudy GNI no.21:178-190 '59. (MIRA 14:5)
(Daghestan--Geology) (Gas, Natural--Geology)

GALIN,.V.L.

Structural features of the western anticline zone of southern Daghestan. Trudy GNI no.21:191-208 '59. (MIRA 14:5)
(Daghestan—Geology, Structural)

GALIN, V.L.; MIKULENKO, K.I.

Outlook for finding oil and gas in foraminiferal and Khadum sediments of Daghestan. Izv. vys. ucheb. zav.; neft' i gaz 5 no.3:13-17 '62. (MIRA 16:8)

1. Groznenskiy neftyanoy institut.

FEN'YEV, N.V.; GASANGUSEYNOV, G.G.; GALIN, V.L.; SHARAFUTDINOV, F.G.

New data on the geological structure, and oil and gas potentials of the northeastern wing of the El'dam-Irgarthash uplift in Daghestan. Geol. nefti i gaza 7 no.5:35-39 My '63.
(MIRA 16:6)

1. Dagestanskaya kompleksnaya geologicheskaya ekspeditsiya i Groznenskiy neftyanoy institut.
(Daghestan—Petroleum geology)
(Daghestan—Gas, Natural—Geology)

GALIN, V.L.; PLYUSHCHENKO, V.G.

Hydrogeology of Upper Cretaceous sediments in Daghestan in connection with their oil and gas potentials. Izv. vys. ucheb. zav.; geol. i razv. 6 no.4:120-127 Ap '63. (MIRA 16:6)

1. Groznenskiy neftyanoy institut.
(Daghestan--Petroleum geology)
(Daghestan--Gas, Natural--Geology)

TALALAYEV, V.D.; GALIN, V.L.

Lithological and stratigraphic features of fractured Upper Cretaceous rocks in northeastern Ciscaucasia. Trudy VNIGRI no.228: 40-61 '64 (MIRA 17:8)

GALIN, V.I., PLYUSHCHENKO, V.G.

Oil and gas potentials of the Lower Cretaceous sediments of Daghestan based on hydrogeological indices. Izv. vys. ucheb. zav.; enft' i gaz 7 no.3:15-17 '64. (MIRA 17:6)

1. Groznenskiy neftyanoy institut.

ALIYEV, A.G.; GALIN, V.L.; MIKULENKO, K.I.

Prospects for finding gas and oil in the Samur regions of Daghestan and Azerbaijan. Geol. nefti i gaza 8 no. 1:29-33 Ja '64. (MIRA 17:5)

1. Dagestanskiy gosudarstvennyy universitet i Groznenskiy ordena Trudovogo Krasnogo Znameni neftyanoy institut.

ALIYEV, A.G.; GALIN, V.L.; AKAYEV, B.A.

History of the geological development of Daghestan in the Paleocene and Eocene. Sov. geol. 7 no.3:94-103 Mr '64.
(MIRA 17:10)

1. Dagestanskiy gosudarstvennyy universitet, Groznenskiy neftyanoy institut, Dagestanskiy fialial AN SSSR.

ALIYEV, A.G.; GALIN, V.L.; SHARAFUTDINOV, F.G.

Diatomite-spongolith formations in the Paleogene formations of Daghestan. Lit. i pol. iskop. no.5:110-113 S-O '64. (MIRA 17:11)

1. Dagestanskiy universitet, Makhachkala.

AKAYEV, B.A.; GALIN, V.L.

Characteristics of the ratios of the authigenetic-mineralogical forms of the iron and organic carbon in the Paleocene and Eocene sediments of the Daghestan foothills. Lit. i pol. iskop. no.6:93-98 N-D '64. (MIRA 18:3)

1. Geologicheskiy institut g. Makhachkala i Neftyanoy institut g. Groznyy.

PERKOV, Vasiliy Gerasimovich, kand. tekhn. nauk; GALIN, V.L., inzh., retsenzent; KOVAL'CHUK, L.Ya., inzh., red. izd-va; MATUSEVICH, S.M., tekhn. red.

[Auxiliary boiler equipment] Vspomogatel'noe oborudovanie kotel'nykh ustanovok. Kiev, Gos.izd-vo tekhn.lit-ry USSR, 1963. 222 p. (MIRA 16:12)
(Boilers--Design and construction)

RABINOVICH, O.M.; GALIN, V.L., dots., retsenzent; ARONOV, I.Z., kand. tekhn. nauk, red.; VASIL'YEVA, V.P., red.izd-va; SHCHETININA, L.V., tekhn. red.

[Boiler units] Koyel'nye agregaty. Moskva, Mashgiz, 1963. 459 p. (MIRA 17:2)

GALIN, Yuriy Pavlovich; LAVRENT'YEVA, Ye.V., red.; MARTYNOVA, V.A., mladshiy red.; VILENSKAYA, E.N., tekhn. red.

Bolivia. Moskva, Geografgiz, 1962. 61 p. (MIRA 16:3)
(Bolivia—Economic geography)

L 51867-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(c)/EWA(l) Pc-4/
Pr-4/Peb/Pu-4 RPL GG/GS/RM

ACCESSION NR: AT5002665 S/0000/64/000/000/0103/0109

AUTHOR: Pomenko, A. S.; Kotorlenko, L. A. Abramova, T. M.; Dar'yeva, E. P.; Galina, A. A.; Furman, Ye. G.

TITLE: Participation of free radicals in the radiative oxidation of polycaprolactam

SOURCE: AN UkrSSR. Institut khimii vysokomolekulyarnykh soyedineniy. Sintez i fiziko-khimiya polimerov; sbornik statey po rezul'tatam nauchno-issledovatel'skikh rabot (Synthesis and physical chemistry of polymers; collection of articles on the results of scientific research work). Kiev, Naukova dumka, 1964, 103-109

TOPIC TAGS: polycaprolactam oxidation, gamma irradiated polymer, radiative oxidation, free radical, antioxidant, EPR spectrum, polymer film, hydroperoxide liberation

ABSTRACT: Variations in the electron paramagnetic resonance spectra from irradiated (Co^{60}, 30C, vacuum, $2 \cdot 10^4$ to $200 \cdot 10^4$ joule/kg) polycaprolactam films (from acetate solutions, $10-12 \cdot 10^{-6}$ m) in relation to temperature, radiation dose and atmospheric oxygen were analyzed in a study covering the behavior of free radicals, their participation in the radiative oxidation of a polymer and the inhibi-

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tion of the latter process by di-β-naphthyl-p-phenylenediamine. Chromatographic analysis detected H, CO and 3% CO_2 in the gaseous products of the radiolytic decomposition of the polymer in either a vacuum or an oxygen environment. The mechanisms by which these constituents are liberated are described, and the authors define radiation-produced changes in viscosity and content of terminal amino groups. The authors conclude that the characteristics of primary radicals liberated during radiative oxidation are similar to those produced in vacuum radiolysis; they therefore deduce parallel patterns of conversion of liberated RO_2 radicals into hydroperoxides and carbonyl-containing compounds. Addition of 0.5 to 3% antioxidant significantly reduced the content of hydroperoxides and carbonyl-containing compounds accumulating during radiative oxidation. "The authors express gratitude to academician A. I. Brodskiy (AN UkrSSR) for his assistance and participation in evaluating the results." Orig. art. has: 6 figures and 1 table.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN UkrSSR (Institute of Physical Chemistry, AN UkrSSR); Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (Kiev Branch, All-Union Scientific Research Institute of Synthetic Fibers)

SUBMITTED: 22Jun64 ENCL: 00 SUB CODE: MT, EP

NO REF SOV: 002 OTHER: 003

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ACCESSION NR: AP4033700 S/0073/64/030/004/0376/0384

AUTHOR: Fomenko, A. S.; Abramova, T. M.; Dar'yeva, E. P.; Galina, A. A.; Furman, Ye. G.

TITLE: Oxidative destruction of polyamides. II. Participation of free radicals in the radiolysis and radiation oxidation of polycaprolactam.

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 4, 1964, 376-384

TOPIC TAGS: polyamide, polycaprolactam, caprolactam oligomer, oxidation, free radical formation, radiolysis, radiation oxidation, EPR spectra, C N bond rupture, hydroperoxide formation, IR spectra, antioxidant, viscosity, cross linkage

ABSTRACT: The free radicals formed by irradiation of polycaprolactam with cobalt-60, their function in the radiation oxidation of polycaprolactam, and the inhibiting action of an antioxidant were investigated. The electron paramagnetic resonance spectra of polycaprolactam and caprolactam oligomers irradiated with cobalt-60, and the effects of temperature, radiation dose and presence of oxygen on the changes in these spectra are described. The gaseous products of polycaprolactam radiolysis in vacuum are hydrogen and carbon monoxide in a 3:1 ratio and about

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3% CO_2. The amount of terminal amino groups almost doubled on irradiation; with a 22 mrad dose this corresponded to the rupture of 1% of the C-N bonds in the polymer. The viscosity of the polymer also changes on irradiation--with 8 mrad irradiation the viscosity decreased during the first 30 hours, then increased, apparently due to the formation of cross-linked structures. The accumulation of hydroperoxide in polycaprolactam on gamma-irradiation in oxygen, the effect of radiation dose, the changes in terminal amino and carboxyl groups and the viscosity of the polymer were examined. H_2:CO ratio in these products was 2:1; terminal NH_2 and COOH groups increased at doses below 15 mrad and decreased above that. These data agree with changes in the IR spectra of the irradiated polycaprolactam. It is concluded that the RO_2 radical formed by radiation oxidation is converted to the hydroperoxide and carbonyl-containing compounds by a parallel route. Addition of 0.5-3% antioxidant di-β-naphthyl-p-phenylenediamine to the polymer does not affect the form of the EPR spectra or concentration of free radicals formed by gamma-irradiation; but this additive significantly lowers the amount of hydroperoxide and carbonyl-containing compounds formed by radiation oxidation. "N. S. Oleynik and M. T. Kozhura took part in the experimental work."... "The authors thank AN USSR academician A. I. Brodsko for help in the work and participation in its evaluation, and also

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ACCESSION NR: AP4033700

coworkers in the electron paramagnetic resonance laboratory for obtaining EPR spectra and help in evaluating the spectral data." Orig. art. has: 6 figures and 1 table.

ASSOCIATION: Institut fizicheskoy khimii im. L. V. Pisarzhevskogo AN USSR, (Institute of Physical Chemistry);Kiyevskiy filial Vsesoyuznogo NII iskusstvennogo volokna, (Kiev Branch of the All Union NII of Synthetic Fibers)

SUBMITTED: 15May63 ENCL: 00

SUB CODE: OC, NP. NO REF SOV: 010 OTHER: 007

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